

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: wendler@tomcat.adc.ray.com (John Wendler)
Subject: Re: 12 V fans
Message-ID: <9508101414.AA06428@tomcat.adc.ray.com>

I don't have a feel for the current requirements of fans, but it stands to reason that a 12V fan will draw ~10X the current of a 120V fan for the same CFM. You may want to check that your source can supply the necessary additional current. It may be a gulp instead of a sip on your supply!

73 es GL,
John

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: rdkeys@unity.ncsu.edu
Subject: 160M BA follies --- 0200Z nightly 1812khz
Message-ID: <199508101842.0AA20068@cc01du.unity.ncsu.edu>

For the fun of it, I propose everyone dust off their trusty rusty 200 meters and down firebottle stoker and meet ya on 1812khz at 0200Z each evening for a few days and sees hows it goes. Consider it a prelude to this winter's gambit on 200 meters and down.

The band is picking up and there ARE folks there.

Any takers/lurkers abouts on the ether wabies?????

73/ZUT DE NA4G/Bob

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: rdkeys@unity.ncsu.edu
Subject: 6A3 subs for '10
Message-ID: <199508101551.LAA13263@cc01du.unity.ncsu.edu>

>
> Mike also has some 833's that he would like to swap for 810's or T200's.
> He is also looking for UX-210's to duplicate a transmitter from the
> 1920's.

Food for thought.... the closest thing easily found that begets a 210 anymore is either a VT-25/801A or the more common 2A3 or 6A3. I won't tell anyone if that much change is made on a 20's rig. That is commonly done for playing and then stick the real '10 back in for display. The '10 was rated at 6 or 7.5 volts filament, so the 6A3 work's fine at 6 volts.

My baby Hartley runs 6A3's mostly and a treasured '10 when the mood strikes....(:+{}.....

> Thanks & 73,
> Tony
> K4KY0

73/ZUT DE NA4G/Bob Sounds like time to dust off the Hartleys.....
80/160 been getting quite good lately.....

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: jproc@worldlinx.com
Subject: Re: 73, ...-.- ----- PUZZ
Message-ID: <Chameleon.4.01.2.950810112524.jproc@>

So perhaps it is time to consider splitting
>the group (or regroup and Bob put it). I think the non-technical
>discussions DO have a place and it would be a shame to lose them.

Shaun,

I think the idea of deleting messages of non-interest is still the best way to go and doesn't take long. At least for now. The problem of splitting up the group into technical and non-technical units (factions?) just complicates matters. As more and more members come on board, more and more diverse interests have the risks of being at loggerheads with one another. Its simply unavoidable. Most of the USENET groups are a wasteland and from my viewpoint this is the best place to be.

The educational value derived from this group for me personally in the last 7 months has been unbelievable and the novelty still hasn't worn off. I still look forward to my daily load of messages which will help to enrich my knowledge of the BA art.

Regards,

Jerry Proc, VE3FAB
Radio Restoration Volunteer
HMCS Haida
E-mail: jproc@worldlinx.com
Toronto, Ontario

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: Scott_Johnson-AZAX60@email.sps.mot.com
Subject: RE>Adding fans to cool BA f
Message-ID: <"Macintosh */PRMD=MOT/ADMD=MOT/C=US/"@MHS>

RE>Adding fans to cool BA finals 8/10/95
considering the typical 150 mA current of DC fans, this would not be feasible.
You could, however, use a doubler off of the 6.3V filament source. Most DC
brushless fans will operate from 9-15 VDC.

With the prices of finals these days it seems wise to consider a
small fan to cool and preserve my tubies. The problem is that I have several
small, quiet fans all of which require 10-12 volts but none of my tubed rigs
have a 12 volt supply. So, the question is.... Does anyone know a good
cheap and dirty method to feed +12 off say a 250 volt line in a boatanchor?
Any suggestions would be appreciated.

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Gable, Edward M" <emg@rfpo2.rfc.comm.harris.com>
Subject: RE: Adding fans to cool BA finals
Message-ID: <3029EDBF@smtpgate.rfc.comm.harris.com>

>With the prices of finals these days it seems wise to consider a
>small fan to cool and preserve my tubies. The problem is that I have
>several
>small, quiet fans all of which require 10-12 volts but none of my tubed
>rigs
>have a 12 volt supply. So, the question is.... Does anyone know a good
>cheap and dirty method to feed +12 off say a 250 volt line in a boatanchor?
>Any suggestions would be appreciated.

This is a simple application of ohm's law to calculate resistor
value, but there are other problems; Soaring B+ with cold
filaments and reserve current capability are major concerns.
Why not stick with 115 VAC fans, they are available now in
very small footprints.

Regards,

Ed K2MP @ Rochester
emg@rfc.comm.harris.com

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: Jim Durham <durham@w2xo.pgh.pa.us>
Subject: RE: Adding fans to cool BA finals
Message-ID: <Pine.BSF.3.91.950810082136.1625A-100000@w2xo.pgh.pa.us>

On Thu, 10 Aug 1995, Gable, Edward M wrote:

>
> >With the prices of finals these days it seems wise to consider a
> >small fan to cool and preserve my tubies. The problem is that I have
> several
> >small, quiet fans all of which require 10-12 volts but none of my tubed
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> >cheap and dirty method to feed +12 off say a 250 volt line in a boatanchor?
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> This is a simple application of ohm's law to calculate resistor
> value, but there are other problems; Soaring B+ with cold
> filaments and reserve current capability are major concerns.
> Why not stick with 115 VAC fans, they are available now in

The only way to do it efficiently is PWM 8-). Now, you could commit the sacrilege of taking a teeny switching supply, feed the +250 to the input filter caps...or, in the spirit of BA, you could build a tube-type chopper! Let's see...about 5% duty cycle filtered with a *big* electrolytic! You need an unbalanced flip-flop driving something big enough to handle the current. Hmmmmmm.....probably don't need regulation for a fan... Aren't you sorry you asked?

73
Jim, W2XO

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Re: Adding fans to cool BA finals
Message-ID: <Pine.SOL.3.91.950809205725.11401A-100000@clark.net>

On Wed, 9 Aug 1995, Barry L. Ornitz wrote:

> On Wed, 9 Aug 1995, Greg Anders wrote:

> > With the prices of finals these days it seems wise to consider a
> > small fan to cool and preserve my tubies. The problem is that I have several
> > small, quiet fans all of which require 10-12 volts but none of my tubed rigs
> > have a 12 volt supply. So, the question is.... Does anyone know a good
> > cheap and dirty method to feed +12 off say a 250 volt line in a boatanchor?
>
> You could buy a standard 120 volt muffin fan. Be sure and get an
> original "Whisper Fan" if you want low noise. I have bought used ones at
> hamfests for as little as a dollar but I had to dig through the box to
> find a quiet one.
>
> If you have to use a 250 VDC supply, a series dropping resistor will
> create more heat than the fan takes away. A (heaven forbid) switching
> buck regulator could do this fairly efficiently but would create lots of
> electrical noise.

How about two fans in series?

> I tend to like Eimac's statement in "The Care and Feeding of Power Grid
> Tubes" which goes something like: Too much air is not harmful when
> cooling air cooled tubes until you reach the point where the tube is
> blown from the socket and smashes against the ceiling!

I like it!

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995

From: "Barry L. Ornitz" <ornitz@eastman.com>

Subject: Re: Adding fans to cool BA finals (Treatise on Fans)

Message-ID: <Pine.ULT.3.91.950810093109.26227C-100000@dua150.kpt.emn.com>

On Wed, 9 Aug 1995 jproc@worldlinux.com wrote:

> Simply insert a non-polarized 250VAC capacitor in series with the fan. Any
>
> Select a value which will move the most volume of air at an acceptable noise
> level. The best part is no heat dissipation.

Jerry,

I have done this before and it works. However, I do not recommend it for two reasons. The first is that you MUST use an AC capacitor properly rated for the line voltage. Non-polarized oil capacitors are usually available and they work fine. Unfortunately, ordinary paper or film capacitors should NOT be used in most AC line applications (special bypass capacitors, rated for this use are available though). Normally a DC voltage rating of 10 times the line voltage is needed. In this application, things are not so critical because if the capacitor shorts, the fan receives its rated voltage. In bypass or across-the-line applications a short can be quite dangerous.

The second reason relates more to how the fan operates, i.e. how much air it delivers and at what back pressure. When you slow a fan down, not only does its free flow delivery drop, its rated back pressure drops too. There is a very good reason that the fan makes noise when it is running; it is moving air against a back pressure. If you drop the speed too much, you may suddenly find the fan is quiet because it is no longer moving much air. If you only need a little air, this is fine; but if you really need the cooling watch out.

Proper sizing of fans and blowers, especially for air-cooled tubes, is a subject that has been poorly understood by most hams over the years. Eimac and Bill Orr, W6SAI, wrote a little about this in QST but for some reason hams still have problems with the concepts of fan delivery versus back pressure. I don't have any data sheets handy but I remember a 4CX250B requires about 13 cubic feet per minute of air at sea level with the proper air-system socket. At this flow rate, the pressure drop is well over an inch of water column. This is pretty low if you consider that two feet of water column are approximately a pound per square inch (1 psi = 27.68 inches of water @ 4 deg C = 6.9 kilopascals). A Rotron "Whisper" fan is rated to deliver about 80 CFM in free air, but it completely stops delivery at approximately 0.15 inches of water back pressure. Other similar muffin-type fans can go up to 0.3 inches of water before their flow drops. From this you can see that it is IMPOSSIBLE to adequately cool a 4CX250B with a muffin fan and stay within the tube's full ratings.

There are some generalities about fans that every ham should know. When the fan speed varies:

1. The capacity (CFM at zero back pressure) varies directly with the speed.
2. The static pressure (zero delivery back pressure) varies as the square of the speed.
3. The power input to the fan varies as the cube of the speed.

I am not sure how the wind noise of a fan varies. I know it is dependent on blade tip velocity but I am not sure about the exponent.

So to conclude, if you only need a little cooling and want reduced noise, slowing down a fan is practical. Just remember that the cooling capacity drops quickly.

One trick that works especially well with sweep-tube rigs like the Drake T-4x is to run the fan at low speed during receive and run the fan at full speed when transmitting using a spare set of contacts on the T/R relay.

73, Barry WA4VZQ ornitz@eastman.com

PS: For those that complain about excessive bandwidth from the BA listprocessor, I suggest we all do as I did and not quote the entire previous post. Likewise we should make our titles descriptive or edit the original title in such a way as to let the readers quickly decide whether it is something they want to read. If it is not, the delete function is so very easy to use. I personally like to see the variety in our postings, but I agree that it is annoying to see someone quote in its entirety a previous article only to add "I agree" at the end.

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <Pine.SOL.3.91.950810110843.25240B-100000@clark.net>

Harbach Electronics, 2318 S. Country Club Road, Melbourne, FL 32901, 407-723-7145, has a replacement high-volume fan for the SB-220 for \$25.00. If it's similar to the original SB-220 fan, it's just a stand alone motor with a fan blade that mounts on the inside of the back panel.

As another idea, and this might sound goofy, but has anybody considered putting a high volume fan out of earshot connected with something like large wet-dry vacuum cleaner hose or clothes dryer vent hose?

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: rdkeys@unity.ncsu.edu
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <199508101543.LAA12714@cc01du.unity.ncsu.edu>

>

> On Wed, 9 Aug 1995 jproc@worldlinx.com wrote:
> > Simply insert a non-polarized 250VAC capacitor in series with the fan. Any
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> > Select a value which will move the most volume of air at an acceptable
> > noise level. The best part is no heat dissipation.
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> Proper sizing of fans and blowers, especially for air-cooled tubes, is a
> subject that has been poorly understood by most hams over the years.
> Eimac and Bill Orr, W6SAI, wrote a little about this in QST but for some
> reason hams still have problems with the concepts of fan delivery versus
> back pressure. I don't have any data sheets handy but I remember a
> 4CX250B requires about 13 cubic feet per minute of air at sea level with
> the proper air-system socket. At this flow rate, the pressure drop is
> well over an inch of water column. This is pretty low if you consider
> that two feet of water column are approximately a pound per square inch (1
> psi = 2.768 inches of water @ 4 deg C = 6.9 kilopascals). A Rotron
> "Whisper" fan is rated to deliver about 80 CFM in free air, but it
> completely stops delivery at approximately 0.15 inches of water back
> pressure. Other similar muffin-type fans can go up to 0.3 inches of water
> before their flow drops. From this you can see that it is IMPOSSIBLE to
> adequately cool a 4CX250B with a muffin fan and stay within the tube's
> full ratings.

Well said.

I don't have any problems with this and for heaven's sake keep yer tubes cool even if just using ambient air on an old DX-60 (don't cover the top and side case holes.....(:+}}.....).

But I would offer the following comments to confuse the issue slightly, but if one remembers the basics, there really is no confusion, and Barry did a good job of explaining for the above.

ROBERT'S RULE OF THUMB No. 1 about forced air tube cooling --- If the tube can be easily pushed into the socket when air is blowing, then the odds are good you have insufficient cooling. A tube should float on its cooling air pressure above the socket. Then you have sufficient cooling air pressure. (I don't lay claim to coming up with this but it is ``common knowledge'' passed down from OT's to young squirts. It has always worked for me.)

ROBERT'S RULE OF THUMB No. 2 about forced air tube cooling --- Little known experiments by Eimac on the use of forced air cooled tubes in well ventilated ambient conditions (e.g., breadboard style with no

confined spaces) have demonstrated that even things like 4CX250B's will work fine without forced air cooling at reduced power provided sufficient radiative heat is dissipated into ambient air. On something like 4CX250B's they work fine at 150 watts each in ambient air. I can attest to this because I have worked with a friend on a breadboard 80 meter KW rig using an ARC-5 driver running 3 each 4CX250B's mounted on loctal sockets flat on a breadboard about 24 inches square, using a 2250 volt pole pig power transformer and running an even KW plate input. As a goo-goo-eyed novice it was a reall learning experience for me. He ran the monster-thing for several years back in 1970-72. I don't recall him ever blowing one tube in the two years I was around his shack. (If someone can provide me the data from Eimac's experiments on this I would appreciate a copy. I have read it somewhere, but can't backtrack to exactly where. It may have been in an old QST or such where the little 4CXxxx tubes were first described, but I don't remember exactly where. I do know it works.)

The point is..... if in doubt, follow rule number 1. If you know what you are about, then you can follow as little as rule no. 2 and still be entirely successful. BUT, don't run yer pet boxed in linear without proper cooling --- you will be asking for trouble then. Consider the case of the famous 833 tube of broadcast renown. It runs a cool kilowatt in ambient cooling, but will run 1800 watts output with forced air cooling. That brings us up to rule no. 3.

ROBERTS RULE OF THUMB No. 3 about forced air tube cooling --- If for some reason you cannot provide sufficent forced air cooling to meet the required tube specifications, then don't run the tube beyond 50% rated capacity. Generally, even forced air tubes can be run at 33% rated capacity in ambient air. The basic requirement is not to overheat the tube glass/metal or ceramic/metal seals. The second basic requirement is not to prevent dissipation of plate heat. How that is done is mostly irrelevant. Forced air cooled tubes using axial flow cooling fins work best, obviously, with axial flow cooling air. But, if you can dissipate the heat other ways, they will still work. That is how Eimac can make tubes that are basically the same guts, but with axial flow or transverse flow or conductive flow radiating elements.

> There are some generalities about fans that every ham should know. When
> the fan speed varies:
> 1. The capacity (CFM at zero back pressure) varies directly with
> the speed.
> 2. The static pressure (zero delivery back pressure) varies as
> the square of the speed.
> 3. The power input to the fan varies as the cube of the speed.
> I am not sure how the wind noise of a fan varies. I know it is dependent
> on blade tip velocity but I am not sure about the exponent.

I can't quote tip velocities, either but.....

All the tube blowers I have worked with from military radio equipment with forced air cooled tubes had VERY NOISY BLOWERS --- like they screamed! If they did not scream, that was the first hint that something was amiss. I am particularly fond of the scream of the ANGRY-19 blowers in the T-195. They run ya outta tha room!

> So to conclude, if you only need a little cooling and want reduced noise,
> slowing down a fan is practical. Just remember that the cooling capacity
> drops quickly.

Very true. And add the consideration that if the tubes are tightly boxed in (as for example on most modern linears or hybrid transceiver types) you may be damaging the tubes if cooling drops too much because of the tight and cramped spaces not dissipating heat by ambient means. The only recourse when this happens is reduce plate input.

> One trick that works especially well with sweep-tube rigs like the Drake
> T-4x is to run the fan at low speed during receive and run the fan at
> full speed when transmitting using a spare set of contacts on the T/R relay.

Now that is some inventive wisdom of the first order! Neat! I sense it would not work on QSK.....(:+{f{.....

Basically tube cooling calls for a touch of horsesense in addition to tube spec sheets.

> 73, Barry WA4VZQ ornitz@eastman.com

.... end material trimmed for BA mailer dieting.

73/Bob/NA4G
rdkeys@unity.ncsu.edu

even no .sig to keep the diet trim.

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: clarke@acme.ist.ucf.edu (Thomas Clarke)
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <m0sgZYg-0006WsC@next1.acme.ist.ucf.edu>

I meant to send this to the list, but the phone rang, so if it is redundant, forgive me.

How good is the insulation on those little fans? They are all

plastic, I bet they would take quite a voltage.
So why not wire in series with the final B+. Most finals
draw the 150 ma or so needed to run the fan. If more use more
fans, a parallel resistor, or put in a screen circuit.
A 12 volt drop in B+ would not reduce the power output much.
The fan would only run when transmitting, but that should be OK.

Tom Clarke, KE4VFH

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: Grant Youngman <gyoungma@gtetel.com>
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <Chameleon.950810104603.grant@nq5t.gtetel.com>

>As another idea, and this might sound goofy, but has anybody considered
>putting a high volume fan out of earshot connected with something like
>large wet-dry vacuum cleaner hose or clothes dryer vent hose?
>

Isn't this essentially what Collins did with the KWS-1?

Grant Youngman NQ5T

gyoungma@gtetel.com
us007699@interramp.com

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "Barry L. Ornitz" <ornitz@eastman.com>
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <Pine.ULT.3.91.950810111607.26775A-100000@dua150.kpt.emn.com>

On Thu, 10 Aug 1995, Tony Stalls (K4KY0) wrote:

> As another idea, and this might sound goofy, but has anybody considered
> putting a high volume fan out of earshot connected with something like
> large wet-dry vacuum cleaner hose or clothes dryer vent hose?

Thanks for bringing this up, Tony. This method works but remember that the
hose has pressure drop associated with it too. The corrugated hoses have
more pressure drop than smooth tubing of the same internal diameter but I
have not seen a correlation for this. Perhaps an ASRAE handbook has this.
Of course, they have to be corrugated to be flexible. Dryer vent hose is
quite inexpensive too.

For "high pressure" applications, i.e. those with over an inch of static pressure, centrifugal blowers are generally used rather than fans. This is why heat pumps, central air conditioners, and furnaces use blowers rather than axial fans.

With large transmitting tubes, it is worth putting a manometer or draft gauge in the system to assure you have adequate static pressure. You should also measure the tube temperature. In the good ol' days, Eimac recommended Tempil products such as the Tempilac paints or crayons. These are made from special waxes that melt at a specified temperature. I have in my desk a set of crayons that go from 125 F to 600 F (52 C to 316 C) in 25 degree F steps. These are sold by Omega Engineering and are readily available. More modern methods use infrared optical pyrometers for this measurement. There are some things that the crayons seem to work best on! [No comments from the peanut gallery, please!] :-)

73, Barry WA4VZQ ornitz@eastman.com

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "Roberta J. Barmore" <rbarmore@indy.net>
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <Pine.3.89.9508101051.B9178-0100000@indy1>

Hi!

On Thu, 10 Aug 1995, Tony Stalls (K4KY0) wrote:
> [...] this might sound goofy, [...] a high volume fan out of earshot
> connected with [...] clothes dryer vent hose?

It's not goofy at all--broadcast BAs used this trick for *decades* and it's still seen for sub-assemblies on roll-outs that need to be cooled at all times.

But see Barry's nice posting on airflow, back pressure and noise; a long run of hose of diameter large enough to be useful (wet/dry vac hose won't do, I think, too small) only makes matters worse: it's not smooth inside and you have to be careful not to bend it too sharply, both of which make the pressure the fan's working into all the higher. So there will be some "wind noise" even though the "blade noise" will be less; perfect silence is not easy to come by.

The tricks: Use a blower, not a "sucker;" the equipment should be at *positive* pressure so it doesn't eat room dust and bits of wire, etc. through every little opening you overlooked. "Transmitter dust" is a fine, black, almost oily substance and is usually a bit conductive. You're going to get it any time you push air through a rig, but positive

pressure will help keep it to a minimum.

Put the blower in the basement, so located that the run to the device to be cooled will be as short and straight as possible. Mount it solidly to the poured-concrete floor, or better still, on shockmounts solidly connected to the floor. *Filter* the intake air; a smallish furnace filter and a sheet-metal, Masonite, or even re-inforced cardboard holder/adaptor will do. (The bigger the intake, the better, btw, as it's easier to pull air through). Change the filter when it gets dusty, too!

Seal up the gear--you want it to be air tight! Then install an exhaust duct, out a window or into the attic--or even in the basement, though not right next to the intake. The true penny-pincher might consider exhausting air into the cold-air return of the heating system.

Do not make *any* rigid connection between the cooled device and the fan; it's also helpful to the the same thing with the exhaust. This cuts down on the rumble, usually carried by conduction. They sell little canvas doodads for this purpose, though a bit of flexible dryer hose will do. It's also no sin to run fans in "push-pull," on on each side of the device, though the exhaust fan had better be as big as or bigger than the supply, in terms of air flow, or you're better off without it. Fans can be run in "parallel," too, several side-by-side, though they'll add up to a little less than the sum of their flow-rates: some loss in turbulence, which I think we can ignore; if you're after a Class A legal-limit amplifier, you might have to take it into account!

Do *Not* *Ever* supply a transmitter with air significantly cooler than room air unless the humidity is 0% or less--I don't think I've got to explain this one.... :) Basement air is usually just fine, but if you're thinking about using a tiny air-conditioner, forget it.

...The rigs they pay me to fix are supplied with (cooled) room air via a very large blower in the basement, three stages of filtering and a huge heat-exchanger; this keeps the entire back room at 65F year-round. Then it's drawn into each side of the transmitter by a pair of blowers about twice the size of what's in your furnace, with a 6" pressure drop (see Barry's post) and 100-degree temperature rise across the visual PA *tube* (singular--4CX24,000, they're big) on each side, and exhausted directly into duct leading to another enormous blower in the basement, that blows the air out through a very large grille near the tower base. In the winter, we divert some of it to heat the building. Even at that, I had a dozen kittens up here one winter, in a small shed on the exhaust grille. It never got below 60 inside it, even on the coldest nights, and with the plate voltage off! (The tubes get *real* warm, they don't call 'em "heaters" lightly in the bigger sizes!).

The system moves so much air that we have had the blowers in one side of the transmitter *fail* and the exhaust pulled enough air that stack temperature varied not one jot--so it's possible to make a very good system. Scaled down to, oh, a kW-output rig, it would be pretty cheap to do, though you'll not be able to heat the house with it.....

73,
--Bobbi

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)
Message-ID: <Pine.SOL.3.91.950810122100.7144F-100000@clark.net>

On Thu, 10 Aug 1995, Barry L. Ornitz wrote:

> On Thu, 10 Aug 1995, Tony Stalls (K4KY0) wrote:
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> Thanks for bringing this up, Tony. This method works but remember that the
> hose has pressure drop associated with it too. The corrugated hoses have
> more pressure drop than smooth tubing of the same internal diameter but I
> have not seen a correlation for this.

As I think about it, noise is another thing to consider about those kinds of hoses. I have been doing some drainage work around my house and had a 100 foot length of 4" flexible drain pipe. It has very interesting resonating characteristics and would make quite a bizzare echo chamber. (I teased my Labrador Retriever puppy with it a little by calling her name and she didn't know what to make of it.)

> These are made from special waxes that melt at a specified temperature.
> I have in my desk a set of crayons that go from 125 F to 600 F (52 C to
> 316 C) in 25 degree F steps. These are sold by Omega Engineering and are
> readily available.

What a great idea! I can think of lots of applications for that. How does one get hold of Omega Engineering?

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: linscot@is.rice.edu (Steve Linscott)
Subject: Re: Adding fans to cool BA finals (Treatise on Fans)

Message-ID: <199508101819.NAA07891@is.rice.edu>

Bob sez:

>ROBERTS RULE OF THUMB No. 3 about forced air tube cooling --- If for some
>reason you cannot provide sufficient forced air cooling to meet the required
>tube specifications, then don't run the tube beyond 50% rated capacity.
>Generally, even forced air tubes can be run at 33% rated capacity in
>ambient air. The basic requirement is not to overheat the tube glass/metal
>or ceramic/metal seals. The second basic requirement is not to prevent
>dissipation of plate heat. How that is done is mostly irrelevant.
>Forced air cooled tubes using axial flow cooling fins work best, obviously,
>with axial flow cooling air. But, if you can dissipate the heat other
>ways, they will still work. That is how Eimac can make tubes that are
>basically the same guts, but with axial flow or transverse flow or
>conductive flow radiating elements.
>

I found an example of this in the last batch of tubes I "rescued" from
being thrown out by the Physics dept. The Eimac 4CX125C - same base and
specs as the 4CX300A, but with transverse fins instead of radial. Must
have been made for some special application, although it's in my Eimac tube
manual.

- Steve -

```
*****
*   Steve Linscott           Divisional Consultant - Natural Sciences   *
*   IS User Services         Rice University           Houston, Texas   *
*****
```

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: rdkeys@unity.ncsu.edu

Subject: Re: Adding fans to cool BA finals (Treatise on Fans/Water, etc)

Message-ID: <199508101834.0AA19865@cc01du.unity.ncsu.edu>

> >..... But, if you can dissipate the heat other
> >ways, they will still work. That is how Eimac can make tubes that are
> >basically the same guts, but with axial flow or transverse flow or
> >conductive flow radiating elements.

> >

>

> I found an example of this in the last batch of tubes I "rescued" from

> being thrown out by the Physics dept. The Eimac 4CX125C - same base and
> specs as the 4CX300A, but with transverse fins instead of radial. Must
> have been made for some special application, although it's in my Eimac tube
> manual.

>

- Steve -

In the same vein, the 4CX300W tube (I think that is the number) uses
water cooling, on the same basic train of thought. The bottom line is:
(another rule de thumbe) just keep it sufficiently cooled - how don't matter.

73/Bob

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Amendment to BA For Sale List
Message-ID: <Pine.SOL.3.91.950810103353.23365I-100000@clark.net>

I just spoke to Mike Carroll, NI4N, the guy with the big boatanchor for sale
post yesterday. He said that he had several messages on his machine last
night when he got home, but unfortunately it was after 11:00PM and too
late to call back. I suggest that you call this evening after 7:00PM
Eastern Time/6:00PM Central.

Mike also has some 833's that he would like to swap for 810's or T200's.
He is also looking for UX-210's to duplicate a transmitter from the
1920's.

Thanks & 73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "Marcotte, T F (T)" <TFMA@chevron.com>
Subject: Any BA'ers in Israel?
Message-ID: <CPLAN030.TFMA.992919120095222FCPLAN030@ION.CHEVRON.COM>

From: Marcotte, T F (Tom)
Subject: Any BA'ers in Israel?
From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: MEC <danmec@inet.uni-c.dk>
Subject: attention UK - Marconi test instr.
Message-ID: <Pine.3.89.9508101359.A19164-0100000@inet.uni-c.dk>

Anybody in UK who can help with manual for Marconi TF 2300B.
FM/M Mod.meter ?

Must be 'B'. Photocopies OK. Reimburse expences.

Thanks 73

Rag OZ8RO

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: paul Veltman <veltman@netcom.com>
Subject: Re: big footprint, good buddy!
Message-ID: <Pine.3.89.9508092113.A21722-0100000@netcom6>

On Wed, 9 Aug 1995, Terry O'Laughlin wrote:

> Found in July 95 Pop Comm:
>
> FOR SALE: Amplifier with four 4-1000A's, Dahl transformers, Jennings
> vacuum variables, monoband 10-12 meters - \$5,000. Grady, POB 62
> Cooksville, TN 38503. 615-432-5588
>
> No modulator? Don't need none on a linnyear.
> Maybe the address should be TVIville.
>
> 73 Terry O'
>

You mean this guy's still trying to sell that linear? I saw that same ad last year. Poor ole Grady! ;-)

A few years ago, I needed some coax for an antenna project and wanted the polyethelene dialectric rather than foam. The local Radio Shack didn't have any, so I went over to the local CB shop, better known as Al's Muffler Service. So I drove up in an old white van with antennas all over it and walked in. You coulda heard a pin drop. Then one brave sole walked over to me and asked me if I was from the FCC. I replied that I wasn't, and I just wanted some coax. Their back room was a boatanchors delight. There were Hammarlund receivers, viking transmitters and a thunderbolt linear. That was all for channel whatever good buddy.

73

Paul WA6OKQ

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "James T Hanlon" <jthanlo@jade.imdi.sandia.gov>
Subject: Cabinet refinishing help needed
Message-ID: <9507108080.AA808075140@jade.imdi.sandia.gov>

Y'all,

I'm no longer a subscriber to the list because my employer does not want me using his computer for such nefarious purposes on a regular basis. <sigh>
So I'd appreciate any replies sent directly to me, qth jthalno@sandia.gov

Just yesterday, a local ham who is dying of cancer gave me his pair of HQ-129-X's and a Hammarlund 4-11/4-20 pair (transmitter and modulator). The receivers appear sound inside, but the cabinet on one of them has bottom end rust from having been stored on a damp/wet floor too long. The cabinets on the transmitter and modulator are also pretty scroungy.

Does anyone know of a source of grey crackle paint that I could use to refinish the cabinets? I'd prefer something that would cure outside of an oven, though I could put it in my New Mexico attic that gets up to around 120 to 130 F on a good summer afternoon. Any advice on stripping the remainder of the existing paint?

Also, does anyone know what happened to all of the main tuning and bandspread knobs that were originally shipped with the HQ-129-X's? I now have three HQ's, and all of the knobs were changed to spinner knobs. Perhaps the originals make up one of the outer rings of Saturn. (I know one of the other rings is made up of unpaired, lost socks.)

Thanks for the help.

Jim, W8KGI

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: Nina West <ninaw@u.washington.edu>
Subject: Can 6AK5 tube be damaged on emission type tube tester?
Message-ID: <Pine.A32.3.91j.950810095210.63241A-100000@homer14.u.washington.edu>

I recently procured an Accurate Instrument Co. Model 157 tube tester which uses an NE-2 neon bulb as a leakage tester. In one of my reference books it cautions against using this kind of circuit on tubes with a close grid-cathode spacing (e.g. 6BQ7, 6AK5, 6AF6), as the 60-70 volts required to fire the bulb will damage the tube. Of course, before I read this I had already tested a 6AK5 and gotten a leakage indication.

My questions to the experts are:

1. Is this damage possible?
2. Was the leakage indication false or caused by the test?
3. Can I use an ohmmeter to test for leakage?
4. Any other tubes I should be cautious with?

Thanks in advance for the advice

Fred Powell

c/o

ninaw@u.washington.edu

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: Jack Taylor <n7oo@hereford.ampr.org>

Subject: Cooling BAs

Message-ID: <199508101915.0AA01544@uro.theporch.com>

I think the original thread was someone asking about augmenting their lovely old BAs with air so's to extend tube life. Earlier threads on this topic dealt with differences in designs to tube shields. There is no doubt that heat build-up in any tube gear isn't particularly good for most of the components.

Although not original equipment, one solution is to add a little cooling to the critical areas of your BA, be it a receiver or a transmitter. I did this on a Drake T-4C transmitter with good success. This rig was mostly used for RTTY with extended keydown periods. A "quiet" 120vac muffin fan was added externally to the side of the cabinet next to where the sweep tubes were located. This was on continuously whenever the transmitter was on. There was enough air flow to prevent heat from building up inside the cabinet (It really doesn't take much momentum to get the air moving).

The quiet muffin fan wasn't very noisy. The installation of the muffin was such that existing holes in the Drake cabinet were used (4-40 screws). I really got good life out of the finals as they still would tune up to max power, even after several years of operation.

In summary, I'd say yes, considering the cost and effort involved versus the potential of extending precious tube life, BA cooling (if done "tastefully") is worthwhile. Just a little air movement should suffice in most cases where none was originally provided. In other words, gale force winds aren't necessary! (I say this with memory of the noise level put out by the blower in the AN/GRC-106 amplifier. The noise resembling a 10 HP Hoover vacuum cleaner!)

73 de Jack

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: jmartin@hrlban1.aircrew.asu.edu
Subject: Cooling PAs
Message-ID: <SA39+pAW8ka@hrlban1.alhra.af.mil>

Edmund Scientific in NJ sold something called a piezoelectric fan until quite recently (maybe they still do). It consisted of two paddles, sort of like a small salad tongs, moved by a piezo element run off 117 VAC. Very quiet, and it could be stuck most anywhere. I don't know how much air it would move, but it should help keep those tubes at least a little cooler.
73, John Martin

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: jmartin@hrlban1.aircrew.asu.edu
Subject: Cooling PAs, part 2
Message-ID: <SA39+rjX8ka@hrlban1.alhra.af.mil>

BA'ites,
The previous posts brought up excellent points about cooling PAs, and reminded me of my days in organbuilding years ago. The blowers used in pipe organs are high pressure centrifugal types, and depending on the size of the organ (number of pipes needing air) the blowers typically are capable of several hundred CFM at a static pressure of 3"-4" at least. But these are very expensive, typically over \$1000. There is an alternative; most industrial surplus stores I've been in seem to have blowers and fans. In my experience these seem to come in three basic styles: axial fans, generally low static pressure, although there are occasional rare exceptions; squirrel cage fans, big and small, like the type found in a hot air furnace... these deliver lots of air at low static pressure... the rotating impeller on these looks like a squirrel cage, with lots of shallow vanes on its perimeter, it may be as deep as its diameter, and the inlet hole in the blower casing is nearly as large as the impeller diameter itself; and then there are centrifugal blowers which (depending on size) deliver a moderate amount of air at high static pressures... these have an impeller with maybe 6 to 12 radial vanes running from near the center hub out to the perimeter... the impeller depth may be anywhere from 1/4 to 1/10 its diameter, and the inlet hole in the blower casing might be 1/4 the diameter of the impeller. I think a centrifugal blower as described would do an effective job of cooling those PAs. The surplus ones seem to be designed for copiers; I've seen various sizes, most of them would provide a couple inches of static pressure at least, and the larger ones are very close in performance to a small pipe organ blower. I hope this helps.
73, John Martin

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: rdkeys@unity.ncsu.edu
Subject: CWIST Friday Night Fist Function Schedule
Message-ID: <199508101905.PAA21324@cc01du.unity.ncsu.edu>

CWIST FRIDAY NIGHT FIST FUNCTION:

The CWIST Friday Night Fist Function will meet again, for all youse Boatanchorites with a bent ta pound some brass, on the following frequencies and times:

120300Z AUG 95 7027 khz
120400Z AUG 95 3527 khz
120500Z AUG 95 1812 khz <<<<< NOTE NEW QRG ``top band is in''

Call ``CWIST IMI DE yourcall K'' or the standard generic form of
``CQ CWIST DE yourcall K'' from about on the hour to five minutes
after to attact other's attention, or just listen for others
calling and respond. DO join in tho.....(:+{} }.....

There has been little novice response so QSY 200 meters and down for now.
Dust off yer bottleburners an' straight shootin' irons an' have a go!
Bugs/keys/keyboards also acceptable (I won't tell if you don't).

73/SEEU/ZUT DE NA4G/Bob

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: jmartin@hrlban1.aircrew.asu.edu
Subject: Early superhet dates
Message-ID: <SA39+95W8ka@hrlban1.alhra.af.mil>

Ref:

>Where does the superhet fall in this scheme? Were there superhets before
>ganged tuning condensers? And the superhet is clearly an advance over
>the TRF, so maybe it needs its own generation number.

=====

Superhets existed before tuning condensers were ganged. Major Howard Armstrong developed the superhet while serving in WW-1, and a very early set by him is displayed in the Smithsonian. Ganged tuning condensers came along around 1926, give or take a year. A problem with the early sets having ganged tuning was the stages not tracking with each other, so little trimmers or "optimisers" often were added. Some of the early TRF ganging methods were elegant... brass rack & pinion gears, or a master shaft and bevel gears going to separate angled tuning condensers, or (as Atwater Kent did it) a thin phosphor bronze belt driving pulleys on each condenser shaft. In early superhets the local oscillator always was tuned separately from the

1st RF. With IFs in the early sets being anywhere between 30kHz and 100kHz, largely governed by the natural resonant frequency of the IF transformers, lots of images could be had when tuning around. But they worked, and despite nothing but triodes some of them were exquisitely sensitive. Neat old sets, well worth preserving.

73, John Martin

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Jack Giehl" <JACKG@s1.xetron.com>
Subject: Re: Eimac 3-500ZG Cathode pins
Message-ID: <267B2737756@s1.xetron.com>

Dear BA Enthusiasts,

Barry wrote about resoldering 3-500Z pins, etc.

Don't forget to check the socket the tube was plugged into to see if it was responsible for the problem, or you may be resoldering again....

I had an experience with a bad socket which may have caused (or at least contributed to) a pin failure in a 3-500Z. I discovered that the contacts for one of the filament connections had lost its temper (no, it wasn't angry :) as a result of heating due to resistance while filament current was flowing through the pin and contact.

I don't know what initially caused the problem, heat from the pin in the tube heating the socket contact, or the socket contact heating the tube's pin. But in either case, you need to make sure the socket is OK before installing the repaired or another tube in the socket.

I swapped the filament contacts with two of the grid contacts on the tube socket to restore full current handing capability to the contacts for the filament.

Jack

73,

=====
Jack, WB8BFS
jackg@xetron.com Loveland, Ohio (near Cincinnati)
=====

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: jcreid@CCGATE.HAC.COM

Subject: Fans & tubes

Message-ID: <9507108080.AA808069665@CCGATE.HAC.COM>

I had a Motorola 450MHz base station that used a 4CX250B for the PA. Motorola had put this incredibly noisy blower system on it that I always thought was way overrated. Maybe it was, considering the manufacturer, but from what Barry said, it was probably just right for the tube.

-Jim N6SVS

jcreid@ccgate.hac.com

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: jeffrey@math.hawaii.edu (Jeffrey Herman)

Subject: First Sports Bcst Done With Spark

Message-ID: <9508101948.AA07863@kahuna.math.hawaii.edu>

>Here's an item from _Famous_First_Facts_, a reference book found
>in many libraries:

>

> Nov 25 1920 - 1st FOOTBALL GAME (COLLEGIATE) BROADCAST was
> presented by (WTAW) of College Station, Tex. The game was
> played on Thanksgiving Day between Texas University and the
> Agricultural and Mechanical College of Texas at College Station.
> At that time the station was operating under an experimental
> license and had the call letters 5XB. A spark transmitter was
> used and the transmission was in code. This was the first
> play-by-play broadcast of a football game.

>

>Other sources report that an experimental station at the University
>of Minnesota "attempted to air football games using a spark
>transmitter and regular telegraph signals" in 1912 and that the first
>football game (Pittsburgh vs West Virginia University) was broadcast
>by Harold Arlin on KDKA in the fall of 1921. Perhaps the KDKA
>broadcast was the first voice broadcast.

>Jeff Miller

>JeffM@sanctum.com

Jeff NH6IL

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995

From: MEC <danmec@inet.uni-c.dk>

Subject: Re: Foreign HeathKits?

Message-ID: <Pine.3.89.9508100933.A28772-0100000@inet.uni-c.dk>

They had a facility in UK some 10-15 years ago.

73 rag oz8ro

On Wed, 9 Aug 1995, Tony Stalls (K4KY0) wrote:

>
>
> On Wed, 9 Aug 1995, penson wrote:
>
> > Heath moved into European markets early on. The products were designed in
> > Benton Harbor but actually fabricated in England. While I do not know for
> > sure, I suspect that the paint job (which is all that was different) was
> > left to the overseas designers. There were variations of some panel
> > meters, and of course the tubes were of European manufacture. It was
> > probably cheaper to do that fabrication overseas than to ship finished
> > metal cabinet parts.
>
> I visited the Heathkit store in Frankfurt, Germany, in 1966 and all I
> recall is that the prices were about twice those in the US.
>

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "penon" <penon@geom.umn.edu>
Subject: Re: Foreign HeathKits?
Message-ID: <199508101453.AA10957@cameron.geom.umn.edu>

The added cost must have something to do with European economics, labor cost, etc, etc...none of which I know much about.

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "rohre" <rohre@arlut.utexas.edu>
Subject: RE: Foreign HeathKits?
Message-ID: <n1404068366.19665@msmailgw1.arlut.utexas.edu>

As early as the mid 60's there were certain extra safety standards in British electrical regulations that besides the 230 VAC 50 hz transformers, possibly dictated some change in the Heath gear. I know Heath had a UK adr. and I do not know, but presume the foreign packaging was done there. These were the units sold throughout the commonwealth and into Asia, wherever the 230 VAC was used.
-Stuart K5KVH
rohre@arlut.utexas.edu

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: SOUNDNMIND@aol.com
Subject: fs hammarlund superpro

Message-ID: <950810161952_71196794@aol.com>

I have a bc779b for sale. 100kc thru 20mc no bc band. I spent 2 days cleaning, repairing, and aligning this anchor. Finish touch with refinished panel original gray and white lettering, black dial masks. This unit works and looks much like it did in 1950. By the way, the last stamp mark repair date from uncle was 1952. The power supply is rack mount and panel is black. You will be hard pressed to find a cleaner pro. I will warranty it for 30 days. I want \$350., conus.

I also have what appears to be a hammarlund speaker cabinet with olive green wrinkle finish, metal patterned grill (also wrinkle finish) with 12" jensen speaker in it, open back no name on front, right and left front edges are rounded. I can configure unit with a 500 ohm trans if needed or as is 8 ohm. Want \$100. conus.

Dee, W4PNT
920B Alexander Ln
Waynesboro, Va. 22980
(800) 755-2365
e mail reply
soundnmind@aol.com

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: haynes@cats.ucsc.edu (Jim Haynes)
Subject: Generations of radio receivers
Message-ID: <199508100731.AAA18581@hobbes.UCSC.EDU>

Here's a topic for discussion, which I hope will be less contentious than the BA rating system proposal. It was inspired by some newbie asking "is the SP-600 a good receiver?" and me trying to explain that that isn't a good question; that it's the top of the line for its particular category, but that doesn't mean it's the greatest receiver ever made.

1st generation: uses coherer for detector

(OK, if you want to get really picky, Hertz used a spark gap for a detector. Call that the zero generation.)

(Say, has anybody built a coherer? With an RF amplifier you could hit it with enough signal to overcome its lack of sensitivity, tho it's still a lousy detector.)

2nd generation: uses some kind of crystal detector (or electrolytic, or maybe even a tube) and a tapped coil or slider on the coil for tuning.

3rd generation: uses variable condenser for tuning. If there are multiple stages then there are multiple non-ganged variable condensers. I believe

these would use non-neutralized triodes for RF amplifiers. Or were neutralized triodes around by this time, or even screen grid tubes?

4th generation: uses ganged variable condenser for tuning. Uses neutralized triodes or screen grid tubes for RF amplification. Might be single band or use plug-in coils or bandswitching.

Where does the superhet fall in this scheme? Were there superhets before ganged tuning condensers? And the superhet is clearly an advance over the TRF, so maybe it needs its own generation number.

5th generation: the classical two-dial superhet, where the SP-600 is the end of the line. Main tuning and bandspread variable condensers.

6th generation: uses a (more or less) linear VFO to make a tunable IF, and then crystal oscillators to convert from input frequency to the tunable IF. As typified by the 75A- series, 51J- series, R-390 family, et al. I guess we'll include the S/line too, and others where the RF stages are tuned by a separate knob to avoid the mechanical complexity of the predecessors.

7th generation: uses drift-canceling circuit and very stable crystal master oscillator, as typified by Racal receivers and the FRR-59/WRR-2

8th generation: today's receivers, convert to a high first IF with a digital VFO, then convert down to fixed IFs.

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995

From: "Tony Stalls (K4KY0)" <j38@clark.net>

Subject: Improving Posting

Message-ID: <Pine.SOL.3.91.950810112059.25240C-1000000@clark.net>

(From your PS to "Adding fans to cool BA finals (Treatise on Fans)")

On Thu, 10 Aug 1995, Barry L. Ornitz wrote:

> PS: For those that complain about excessive bandwidth from the BA
> listprocessor, I suggest we all do as I did and not quote the entire
> previous post. Likewise we should make our titles descriptive or edit
> the original title in such a way as to let the readers quickly decide
> whether it is something they want to read.

Good suggestions! I get hooked reading BA posts and end up spending too much time on-line. It's like "just watching a few minutes" of a TV movie at bed time. I can only add that if there are two subjects in the same message, that I would prefer seeing two short messages with a descriptive

subject line. If the subject line suggests something I would skip over, I might miss some real gem. (e.g. Subject: Transoceanics, Text: "Yes I had one of those in WW2. Say, did I ever tell you guys about the time I won the Congressional Medal of Honor? etc.") :-)

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: Robert Norman <RZ5630@WACCVM.corp.mot.com>
Subject: Millen Xfmrs & other parts
Message-ID: <"RZ5630 95/08/10 15:40:19.223687"@WACCVM.CORP.MOT.COM>

From: Bob Norman <rz5630@waccvm.corp.mot.com>
Subject: Millen Xfmrs & other parts

With all the recent discussion regarding the building of "minimum" transmitters, I have gone back to some books I studied in preparation to obtaining my Amateur Radio License. In the 1953 edition of "How to become a Radio Amateur", page 25, there is a four tube superheterodyne radio that I was planning on building back in 1953. The spark has been lit again and I just have to build this radio. I need to find a few components though. If I could obtain the I.F. transformers specified in the construction article, I can complete construction of this radio. The parts I need are made by the "James Millen" company out of Massachusetts. The parts are:

1500-1600 kc I.F. Transformer, Millen part number 64161
1500-1600 kc BFO Unit, Millen part number 65163
1700 kc I.F. Transformer, Millen part number 62161
Horizontal Oscillator Coil, R.C.A. part number 205R1
Slug Tuned Coil Form, National Radio part number XR-50
Mini-Inductor, Barker & Williamson part number 3008

In the same book, on page 33, there is an excellent 2 tube transmitter that is a companion unit to the receiver. It uses a 6AG7 to a 6L6 to run 30 watts input on 80 & 40 meters. I would like to build that unit also. The only parts I need for the transmitter are the plate coils. They are made by "Bud" and their part numbers are:

BUD OEL-80
BUD-OEL-40
BUD-OEL-20

Some how this station never got built and I think that it would be great fun to complete the project I set out for myself over 40 years ago. Any help you Boat Anchor lovers can provide me, in this personal quest of the Golden Grail, will be greatly appreciated.

Thanks for your help,

Bob, ARS K7NWB

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Mystery Transformer
Message-ID: <Pine.SOL.3.91.950809234900.22791B-1000000@clark.net>

I'm junk box cleaning and found what is apparently some kind of audio transformer and I have no idea where I got it or what it's for. It's new, so I obviously bought it for something, but it was so long ago, I don't have the foggiest notion what it might have been. Numbers on it are S-3703 and 7577202. Both the primary and secondary have five wires. One side (primary?) is: Bk Bk Bl Y-G Bl and the other is: G Y-G G R R. Does anybody know what that is?

I found another transformer I had pretty much forgotten I had too, but fortunately it has markings. It's worthy of note because of what it is. It's rated at 3050 volts center tapped @ 620 ma, but only has a 115 volt 60 cps primary. It was made by the Submarine Signal Company and (here's the best part) it weighs 95 pounds. It sounds *perfect* for a 250 watt boatanchor transmitter.

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Stanley L Flegler" <flegler@pilot.msu.edu>
Subject: Navy Manuals/R-390A
Message-ID: <9508101332.AA23972@pilot01.cl.msu.edu>

I was very interested in the posting by Joe KC6TXU regarding a newer R-390A manual 15 May 1985. I have what is probably a newer address for Navy Publications and a telephone number 215-697-4374. The address I obtained from them about six weeks ago was:

Aviation Supply Office
ASO/NPFD
700 Robbins Ave.-Code 074
Attn: Mailroom

Philadelphia, PA 19111

You must have the correct manual number. They won't (or can't) look up the manual number. Also, it must be a number from the new system, not the old system. The new numbers all seem to have LP in them, like 0913-LP-009-1400, for the R-390A.

73 Stan K8RPA
flegler@pilot.msu.edu

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Re: Navy Manuals/R-390A
Message-ID: <Pine.SOL.3.91.950810100040.23365F-100000@clark.net>

On Thu, 10 Aug 1995, Stanley L Flegler wrote:

> I was very interested in the posting by Joe KC6TXU regarding a newer R-390A
> manual 15 May 1985. I have what is probably a newer address for Navy
> Publications and a telephone number 215-697-4374. The address I obtained from
> them about six weeks ago was: Aviation Supply Office
> ASO/NPFD
> 700 Robbins Ave.-Code 074
> Attn: Mailroom
> Philadelphia, PA 19111
> You must have the correct manual number. They won't (or can't) look up the
> manual number. Also, it must be a number from the new system, not the old
> system. The new numbers all seem to have LP in them, like 0913-LP-009-1400,
> for the R-390A.

That's the truth! When I was searching for the R-390A manual before I got hold of NTIS, they were of very little help other than passing me off to Army publications. (The Army told me to call NTIS to order.)

I also got the impression that the Navy people do not sell manuals to the public. True?

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: morriso@vifp.monash.edu.au (Morris Odell)
Subject: Re: NE-2 failure modes
Message-ID: <199508100812.SAA13146@brain.vifp.monash.edu.au>

>On Tue, 8 Aug 1995 "David W. Barts" <davidb@ce.washington.edu> wrote:
>

>> Must be a common failure mode of neon lamps. I've noticed several neon
>> pilot lights fail this way. Lights on, pilot lamp works fine. Turn off
>> the lights, lamp dies.

>
>It's not a bug, it's a feature.
>

Well it certainly has been used as a feature. I have a Singer Metrics BA panoramic adaptor that I use with my R390A which uses just this mechanism to control the sweep triggering. The "sync" control is a rheostat which varies the brightness of a small incandescent lamp arranged to shine on a neon tube in the sweep circuit, providing "bias". Triggering pulses are applied to a conductive coating on the neon tube. This method works quite well.

73

Morris VK3DOC
morriso@vifp.monash.edu.au

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: wendler@tomcat.adc.ray.com (John Wendler)
Subject: Re:Noisy fans; alternate solution
Message-ID: <9508101737.AA06881@tomcat.adc.ray.com>

I seem to remember a QST article from 1965 or so, entitled The Stanley

Steamer. A 1KW amp using a steam, not water, cooled tube. The comment was that steam had more heat capacity than water, and was more silent than a fan. For a truly unique solution, check it out! There was also the conduction cooled amplifier in the late '70s Handbook...

John

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Re:Noisy fans; alternate solution
Message-ID: <Pine.SOL.3.91.950810135950.18635B-100000@clark.net>

On Thu, 10 Aug 1995, John Wendler wrote:

> I seem to remember a QST article from 1965 or so, entitled The Stanley
> Steamer. A 1KW amp using a steam, not water, cooled tube.

Let's see, I'll bet it was in the April issue. Was the author Larson E. Rapp? ;-)

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: Jack Taylor <n7oo@hereford.ampr.org>
Subject: Old Eimac tubes
Message-ID: <199508101915.0AA01545@uro.theporch.com>

Greg Carter recently asked about differences between the Eimac 100T and the 100TH. I looked through my references but could find no mention of an Eimac 100T. Admittedly my references have gaps. Does anyone know if the 100T ever existed? If it did, it was probably introduced in the mid to late 30"s. Possibly it would show up in the ARRL handbooks of that period.

Another question is what the designation of "T", "TH", and "TL" stood for? "T" for triode, perhaps?

73 de Jack

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: QRP XTALS
Message-ID: <Pine.SOL.3.91.950809233652.22791A-100000@clark.net>

I've recently discovered how much fun QRP is and am about to put together one of the Novice transmitters from the 57 handbook. Long story short, I looked for my CW crystals left over from the good old days and they seem to have evaporated. Does anybody out there have any 7.0-7.15 MHz xtals around that need a good home?

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: RANDY@sbii.sb2.pdx.edu
Subject: Re: Randy gets R390 Manual
Message-ID: <6BF26BC151E@sbii.sb2.pdx.edu>

>I got through to Larry Mills a few minutes ago. He said that he has
>gotten so many e-mail requests after I gave his e-mail address out that
>he hasn't had time to catch up. (I warned him!!!) He asked that
>everyone be patient and he'll get to you.
>
>BTW, while I had him on the phone, I ordered a new manual for the TV-tD/U
>tube tester. FYI, it's TM 11-6625-274-35 and costs \$19.50.
>
>73,
>Tony
>K4KY0
>
>
Dear Tony,

Thanks for checking, and I will continue to wait patiently.

I wonder if we could not do a better job by having one of us collect the entire order list for BA manuals from the "group", and then have a single contact person phone in the group order. This way Larry doesn't have to deal with 27 different orders for R390A manuals. I would be happy to send a check in advance to cover all the manuals I want, plus shipping and handling.

In addition to the R390 (non-A) I have a few other manuals I would like too.

I don't have the manual numbers for any, however. The people at NITS can do this or not???

Thanks again,

=Randy=

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: Scott_Johnson-AZAX60@email.sps.mot.com
Subject: RE>Re- Adding fans to cool
Message-ID: <"Macintosh */PRMD=MOT/ADMD=MOT/C=US/"@MHS>

RE>Re: Adding fans to cool BA finals 8/10/95
Omega- 1-800-826-6342

What a great idea! I can think of lots of applications for that. How does one get hold of Omega Engineering?

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: Scott_Johnson-AZAX60@email.sps.mot.com
Subject: RE>Re- RE>Adding fans to co
Message-ID: <"Macintosh */PRMD=MOT/ADMD=MOT/C=US/"@MHS>

RE>Re: RE>Adding fans to cool BA f 8/10/95
This would most certainly invite instant destruction of said fan, as the chopper circuit does not behave as a resistor.

How good is the insulation on one of those fans? Aren't they mostly plastic? Just wire one in series with the plate lead to the final. If current is higher, put several in parallel.
[Screen supply for big tetrodes?]
Then when the final is energized the fan runs.

A 12 volt B+ drop will have little effect on the output.

Tom Clarke

KE4VFH

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: clarke@acme.ist.ucf.edu (Thomas Clarke)
Subject: Re: RE>Adding fans to cool BA f
Message-ID: <m0sgXtc-0006WsC@next1.acme.ist.ucf.edu>

Scott_Johnson-AZAX60 wrote:

>considering the typical 150 mA current of DC fans, this would not be feasible.

Hmmm? 150 ma. That is a typical value for plate current.
800 volts x 150 ma = 120 watts, 3000 volts x 150 ma = 450 watts etc.

How good is the insulation on one of those fans? Aren't they mostly plastic? Just wire one in series with the plate lead to the final. If current is higher, put several in parallel.
[Screen supply for big tetrodes?]
Then when the final is energized the fan runs.

A 12 volt B+ drop will have little effect on the output.

Tom Clarke
KE4VFH

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: bill@texan.frco.com (William Hawkins)
Subject: Re: RE>Re- Adding fans to cool
Message-ID: <9508101854.AA19245@texan.frco.com>

OK, that's the second call for Omega -
Sales and Customer Service 800-826-6342
Engineering and Technical Assistance 800-327-4333
Omega Engineering, Inc., One Omega Drive, PO Box 4047, Stamford, CT
06907-0047 USA Phone 203-359-1660

>From their inch and a half thick temperature catalog (one of many others) they offer the OMEGASTIK single temperature marker for \$5.90 - the mark runs (melts) at the specified temp, in the range of 100 to 2500 deg F. You might be more interested in the OMEGALABEL that has four spots each separated by 10, 25 or 50 degrees, between 100 and 600 deg F. Specify a starting temperature at 10 deg increments from 100 to 370 deg F, or 25 deg increments from 100 to 425 deg F, or 50 deg increments from 100 to 450 deg F. \$15 for a box of ten labels below about 250 deg F, and

\$22.50 for a box of 10 above 250 deg F. For example, \$22.50 buys you a box of ten labels, each of which has four spots that turn permanently black at temperatures of 250, 275, 300, and 325 degrees F. Size about one inch high, two wide.

I'm just reading from the catalog, I have no experience with them.

Bill Hawkins bill@bvc.frco.com

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: jmartin@hrlban1.aircrew.asu.edu

Subject: Reactivating thoriated tungsten filaments

Message-ID: <SA39+G,Z8ka@hrlban1.alhra.af.mil>

BA'ites,

The topic of 'flashing' the filament in old tubes to regain emission in them was discussed a few days ago. Here is the info from Ghirardi's 'Radio Physics Course' book from 1932. I have not listed types which his book said could not be reactivated. Cunningham types equivalent to the RCA types listed also can be reactivated, but a person may be on thin ice as far as other brands go... check the color temperature of the filament when running at normal voltage first, and if it's yellow or brighter, it should be a candidate for reactivating. Some transmitting types might be candidates too, but that's in a slightly different league from this data.

Reactivation Process

Type	Flashing			Ageing		
	Fil	Volts	Time	Fil	Volts	Time
UX-199	12	10-15	sec	4	30	min
UX-120	12	10-15	sec	4	30	min
UX-201A	16	10-15	sec	7	30	min
UX-200A	16	10-15	sec	7	30	min
UX-240	16	10-15	sec	7	30	min
UX-210	No flashing			9	30	min
UX-216B	No flashing			9	30	min

73, John Martin

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995
From: don merz <71333.144@compuserve.com>
Subject: Return of Trivia...
Message-ID: <950810165631_71333.144_DHQ24-4@CompuServe.COM>

B.A. Trivia Just For Fun

1. The radios that became the military "Command Sets" were designed in what year? At which company? By what two engineers?
2. The first "Command Set" model proposed to the military was the ...?
3. The U.S. military adopted the "command set" radios in a series of nomenclature designations. Name the five designations used for WWII and prior manufactured sets.
4. The unit of measurement we now call the decibel had two earlier names (primarily stemming from the unit's usage in wire line systems-- telephone and telegraph). What was the decibel called before it received it's present name?
5. The first transmitter specifically sold for commercial AM broadcasting was made by what company? In what year? What was the model number? What was its' output power?

Enjoy.
73, Don
71333.444@compuserve.com

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: Jack Taylor <n7oo@hereford.ampr.org>
Subject: Rx tubes as X-ray emitters
Message-ID: <199508100358.WAA01998@uro.theporch.com>

Ran across a WWW site that has an interesting tube article. It describes an experimental setup using a 6EN4 in cold cathode mode to produce X-rays. Information and techniques on building a power supply, as well as safety tips are discussed. This article is an electronic version from a past issue of a publication called the Bell Jar.

The web URL is <http://www.eskimo.com/~billb/amateur/blljar2.txt> Another article that might be of interest is the same but with a " blljar4.txt " extension.

73 de Jack

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: "Tony Stalls (K4KY0)" <j38@clark.net>
Subject: Source of Fans to Cool BA finals
Message-ID: <Pine.SOL.3.91.950810145147.25526E-100000@clark.net>

If you don't have the Mendelson Electronics Company, Inc., (MECI) catalogue, maybe you should consider calling them at 800-344-4465 and getting one. They have lots of wonderful goodies that include, among a lot of other things, two pages of various types of equipment fans with only about a half dozen costing more than \$10 and none over \$14.95. They also have two pages of thermal switches at about fifty cents each too, so you can make the fan kick it at a specified temp too.

73,
Tony
K4KY0

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: Randall Berry <rberry@CapAccess.org>
Subject: SUBSCRIBE
Message-ID: <Pine.SUN.3.91-FP.950810000632.8497A@cap1.capaccess.org>

Subscribe

RBerry@CapAccess.org N3LRX 3885 KHz AM
* Yell-RX Radio * If you give up your right to dream, you have given up
* Bowie, MD. * your will to live.
* *

From boatanchors@theporch.com Thu Aug 10 12:04:00 1995
From: ws4s@multipro.com (Conard Murray)
Subject: TCS Info please
Message-ID: <199508101441.JAA20558@server.multipro.com>

Hello all. I am trying to put a TCS station together. I was wondering what use the TCS set served and how long they were in active service. The manual I have seems to indicate that they were a general utility radio for tanks, ambulances and other vehicles. I thought they were built for shipboard use. I guess in WWII if it worked, it was used. Any info or stories are welcome. I will gather the replies and make a file for everyone to use... maybe Jack will post it to the archive. I also need a TCS transmitter is anyone has a spare.

Thanks de Conard WS4S
Conard Murray WS4S 615-526-4093
217 Dyer Avenue

Cookeville, TN 38501

ws4s@multipro.com ws4s@wa4uce.midtn.tn.usa

From boatanchors@theporch.com Thu Aug 10 18:52:00 1995

From: "Carl P. Gottsmann" <kn6al@ecst.csuchico.edu>

Subject: Re: TCS Info please

Message-ID: <Pine.HPP.3.91.950810123921.1466B-1000000@steroid.ecst.csuchico.edu>

Conard et al.,

 Last year I wrote a letter to Fred Johnson a former Collins employee posing the same question. He very promptly sent back a reply.

 As he related it: The TCS was originally designed for use in the navys "new" light attack craft (ie; PT boats). Upon delivery to the navy, they found them so versitile that they found use in everything the navy had except aircraft, including landing craft, vehicles, and small shore installations. Many, many thousands were built and used up through the Korean war.

 Others here have related *horror stories* Including the unthinkable... Like barges of shrink wrap packed TCS sets being dumped in Lake Michigan in the weeks and months after VJ day. :(

 Carl, KN6AL